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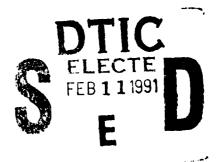
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SUBTASK 27.1

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Report SAIC-85/1047

FINAL REPORT FOR CONTRACT N00014-84-C-0180, SUBTASK 27.1

Prepared by

Robert R. Greene
SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
1710 Goodridge Drive
McLean, VA   22102

1 March 1985

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report summarizes and references work performed at SAIC in the area of full wave acoustic propagation modeling of sea-ice scattering in the Arctic environment using the parabolic equation on Contract No. N00014-84-C-0180.

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FINAL REPORT FOR CONTRACT N00014-84-C-0180, SUBTASK 27.1

1. INTRODUCTION

1.1 Contract Information. This document is the final report for
Office of Naval Research Contract Number N00014-84-C-0180, Subtask
27.1. The work under this contract was conducted during the period
from 3 January 1984 to 2 January 1985. This was the only funded task
in the contract specifically related to acoustic modeling in the
Arctic. The work in this task was carried out in conjunction with the
environmental modeling described in Subtask 28.1 - Environmental
Characterization.

2. SUBTASK 27.1 - HIGH ANGLE PE APPLICATIONS

2.1 Statement of Work. High Angle PE shall be used to make
predictions of transmission loss in the shallow-water ice-covered
shelf environment. Optimum depths, frequency, and depression angle
shall ve evaluated. Effects of ice and basement roughness shall be
evaluated.

2.2 Work Performed. The High Angle PE model was used to
directly simulate the effects of ridge keel structures on acoustic
transmission in the Arctic environment. Because the environmental
modeling in Task 28.1 was restricted to the development of the
environmental inputs for ice properties, the HAPE modeling effort in
this task addressed only acoustic modeling problems related to ice
properties, and de-emphasized the ocean bottom/shallow water problems.
The HAPE model was used to test the adequacy of various environmental
models for the prediction of transmission loss. The final results of
this work are documented in SAIC Report No. SAI-84/1132, "Ice
Statistics and Acoustic Scattering in the Arctic Basin."

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